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Job No.: CTCE/BBMP/W.No.14/BNMK/WMM/Gradation/2015-16

08.08.2015

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Mr. B.N. Mohankumar Nanjappa,** Contractor, Bangalore.

Name of Work : Improvements to roads at 15th, 16th,17thand 18th cross roads MEI Layout in Ward No.14 Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2015-16 Dated: 06.08.2015

Date of Testing : 08.08.2015

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **8310**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	210	210	2.5	97.5	95-100
22.4	2505	2715	32.7	67.3	60-80
11.2	1295	4010	48.3	51.7	40-60
4.75	1205	5215	62.8	37.2	25-40
2.36	990	6205	74.7	25.3	15-30
0.600	925	7130	85.8	14.2	8-22
0.075	980	8110	97.6	2.4	0-8

Note:

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ಟಿ.ದಾಸರಹಳ್ಳಿ ಉಪ-ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ, ಬಿಬಿಎಂಪಿ
ಬೆಂಗಳೂರು

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Job No.: CTCE/BBMP/W.No.14/BNMK/BM(QB)/2015-16

19.08.2015

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Mr. B.N. Mohankumar Nanjappa,** Contractor, Bangalore.
NAME OF THE WORK	:	Improvements to roads at 15th, 16th, 17th and 18th cross roads MEI Layout in Ward No.14 Bagalagunte, BBMP, Bangalore.
REFERENCE	:	BBMP/DZ/AEE/TDSD/PR/2015-16 Dated: 06.08.2015
SOURCE OF LOCATION	:	Hot mix Plant, Bangalore
DATE OF TESTING	:	19.08.2015

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	IS :1203 -1978 (RA-2009)	64	60 to 70
2	Softening point, °C	IS :1205 -1978 (RA-2009)	48	Min. 45
3	Ductility at 27°C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 50
4	Flash Point, °C	IS :1209 -1978 (RA-2009)	292	Min. 220

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Job No: CTCE/BBMP/W.No.14/BNMK/BM/AIV/2014-15

19.08.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Mr. B.N. Mohankumar Nanjappa,** Contractor, Bangalore.
Name of the Work	Improvements to roads at 15th, 16th,17thand 18th cross roads MEI Layout in Ward No.14 Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2015-16 Dated: 06.08.2015
Source / Location	Hotmix Plant, Bangalore
Type of Mix	Bituminous Macadam
Date of Testing	19.08.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	81	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	303	
4	Aggregate Impact value = percent fines	20.89	21.09	
	100* (W_2/W_1)%			20.99

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

Note:

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Job No: CTCE/BBMP/W.No.14/BNMK/BM/Shape.T/2015-16 : 19.08.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	: **Mr. B.N. Mohankumar Nanjappa,** Contractor, Bangalore.
Name of Work	: Improvements to roads at 15th, 16th,17thand 18th cross roads MEI Layout in Ward No.14 Bagalagunte, BBMP, Bangalore.
Reference	: BBMP/DZ/AEE/TDSD/PR/2015-16 Dated: 06.08.2015
Technical Reference	: IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	: Bituminious Macadum
Date of Testing	: 19.08.2015

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Flakiness Index = **12.15%**

Elongation Index = **13.05%**

Result : Combined Flakiness & Elongation index **25.20%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Macadam is 30%

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Job No: CTCE/BBMP/W.No.14/BNMK/BM/Stripping/2015-16

21.08.2015

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Mr. B.N. Mohankumar Nanjappa,** Contractor, Bangalore.
Name of the work	Improvements to roads at 15th, 16th,17thand 18th cross roads MEI Layout in Ward No.14 Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2015-16 Dated: 06.08.2015
Type of Mix	Bituminous Macadam
Date of Testing	21.08.2015

Type of binder : 60/70
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.1	3.10	96.90
2	2.9		
3	3.3		

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Macadam is 95%

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Job No: CTCE/BBMP/W.No.14/BNMK/BM/Agg.G/2015-16

21.08.2015

Aggregate Gradation Test
IS : 2386 Part I

Client	Asst. Executive Engineer, T. Dasarahalli Sub Division, BBMP, Bangalore.
Agency	Mr. B.N. Mohankumar Nanjappa, Contractor, Bangalore.
Name of the work	Improvements to roads at 15th, 16th,17thand 18th cross roads MEI Layout in Ward No.14 Bagalagunte, BBMP, Bangalore.
Reference	BBMP/DZ/AEE/TDSD/PR/2015-16 Dated: 06.08.2015
Sample ID	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	21.08.2015

Total Weight of Sample: 5200 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	335	6.44	6.44	93.56	90-100	
13.2	1650	31.73	38.17	61.83	56-88	
4.75	1400	26.92	65.10	34.90	16-36	
2.36	990	19.04	84.13	15.87	4-19	
0.3	365	7.02	91.15	8.85	2-10	
0.075	140	2.69	93.85	6.15	0-8	

Total Weight of Sample: 5300 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	225	4.25	4.25	95.75	90-100	
13.2	1750	33.02	37.26	62.74	56-88	
4.75	1450	27.36	64.62	35.38	16-36	
2.36	960	18.11	82.74	17.26	4-19	
0.3	440	8.30	91.04	8.96	2-10	
0.075	120	2.26	93.30	6.70	0-8	

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Job No.: CTCE/BBMP/W.No.14/BNMN/SDBC/Bit/2015-16

BITUMEN CONTENT GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

22.08.2015

As per IS2386 and IRC:SP:11-1984

CLIENT	Asst. Executive Engineer, T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	Mr. B.N. Mohankumar Nanjappa, Contractor, Bangalore.
NAME OF THE WORK	Improvements to roads at 15th, 16th, 17th and 18th cross roads MEI Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2015-16 Dated: 06.08.2015
SAMPLE I/D	Roads in MEI layout Ward No.14, BBMP, Bangalore.
DATE OF TESTING	22.08.2015

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	26.35	5.54	5.54	94.46	90-100
4.75	260.5	54.78	60.33	39.67	35-51
2.36	54.23	11.40	71.73	28.27	24-39
1.18	36.25	7.62	79.35	20.65	15-30
0.3	32.65	6.87	86.22	13.78	9-19
0.075	39.65	8.34	94.56	5.44	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	32.26	6.81	6.81	93.19	90-100
4.75	258.6	54.61	61.43	38.57	35-51
2.36	32.26	6.81	68.24	31.76	24-39
1.18	36.25	7.66	75.90	24.10	15-30
0.3	36.21	7.65	83.54	16.46	9-19
0.075	44.56	9.41	92.95	7.05	3-8

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